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ABSTRACT

The effects of financial aid on degree completion for Swedish postsecondary students were studied. Attention was focused on the effect of student social background, sex, and intelligence on utilization of study aid. Separate analyses were undertaken with different age groups and students in different study courses. Two student samples were studied: 12,000 individuals born in 1948, and 10,000 born in 1953. A weak tendency was found for students of high ability to use the aid more frequently than students of low ability, while social background had no influence. The frequency of study assistance utilization did not change very much for the various age groups. For open admissions courses, student sex was not found to be important to degree completion. However, for closed admission courses (i.e., those not usually selected by women), sex had an important effect on degree completion: women were more successful than men, and sex was as important as study aid to degree completion. It is suggested that a decreasing frequency of degree completion cannot be explained by changes in the study assistance system. It is concluded that study assistance is greatly important to degree completion and helps to bring about social equality. (SW)

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STUDY ASSISTANCE AND DEGREE
COMPLETION IN HIGHER EDUCATION

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BACKGROUND AND AIM

Sweden, like most other industrialized countries, allocates a lot of money to study assistance. In the fiscal year 1981/82 the total expenditure amounted to some S.cr. 5,000 million. Of this total sum more than 40% was given to students in post-secondary education.

Study assistance offered to university or college students consists of a grant and a repayable loan. When the present system was introduced in 1965, the grant represented 25% of the total sum but this proportion has been gradually reduced and now, in 1983, it represents only 8%. This declining grant proportion is due to the fact that the total sum received is linked to the cost of living index and when this index is increased according to inflation, only the repayable part of the aid is increased. On some occasions the grant too has been increased but only by small amounts.

There is no examination of need in relation to income or private means of the student's parents. However, the total sum received is reduced if the student has an income or private means exceeding a certain limit.

Any student who comes up to the financial requirements has a right to receive the aid when entering a program of post-secondary education. At this point there is no test of academic ability. But after the first year the student has to demonstrate satisfactory academic progress in order to be eligible for continued aid.

We do not intend to give detailed information here on the Swedish study assistance system because this has already been done by Blaug and Woodhall (1978) and by Woodhall (1982).

When the present system was introduced in the mid-1960s, there was a strong belief that economic support would be an effective means to enhance equality of educational opportunity. By offering this aid even students from low-income families are given the opportunity to attend a university or college program, to make a free choice between programs and to complete a degree.

Even if financial resources are important for educational choice and for success in studies, equality of educational opportunity is not only a matter of economy. As has been pointed out by Jackson (1978) and in a report from Council of Ministers of Education, Canada (1980), the decisions to attend and to persist in a university program are highly influenced by valuations of and attitudes to higher education. These factors in turn are influenced by the future prospects of university-educated people on the labour market. During the 1970s these future prospects deteriorated and consequently post-secondary education grew less attractive to many young people. It seems quite reasonable to suppose that this development was of greater importance for the educational choice among students coming from lower social strata than among students coming from homes with an academic tradition.

Aside from valuations and attitudes, the decision to attend and the possibility to complete a university program are influenced by ability and achievement in previous education. However, as shown by Doermann (1978), these variables are related to family income so that there is a restriction in the number of students with high ability and achievement coming from low-income families - the very target group for study assistance.

These are facts that must be considered when evaluating the effects of study assistance, because financial support is not to be expected to compensate entirely for the influence of these other factors. Consequently we have to accept some group differences concerning educational choices and achievement in higher education. This gives rise to the important problem of finding suitable criteria against which the effects of study assistance can be evaluated.

In our opinion there are no absolute criteria. Therefore we have to content ourselves with investigating whether study assistance has made any difference at all. If it has not, we can claim that the system must be changed or abolished, but if there are some positive effects it is a political problem to judge whether these effects are important enough to justify the expenses.

One way to throw light upon the effects of study assistance is to compare these effects with those of other factors. Thus, the effects of study assistance on success in studies within post-secondary education will be compared here with the effects of social background, sex and intelligence.

Another problem in evaluating the effects of study assistance is to prove that the effects come from study assistance and not from any other concomitant variable. This problem is about a causal relationship and such problems are generally dealt with experimentally. However, this is not a possible alternative when we work with this kind of problem. Instead we have to choose between two other alternatives:

- 1) to ask the students themselves to judge the importance of study assistance
- 2) to investigate the relationship between student aid on one hand and enrollment and success in post-secondary education on the other hand.

In this study we have chosen the second alternative, mentioned above, i.e. we will investigate the relationship between student aid and success in post-secondary education. The variables which we will control for are age group, course of study, social background, sex and intelligence.

One reason for controlling *age group* is that the loan part of the student aid has increased considerably since the system was introduced in the middle of the 1960s. This means that the student aid was less advantageous to students entering post-secondary education during the 1970s compared to students entering earlier. At the same time, as the study assistance grew less advantageous, the future prospects of the labour market deteriorated, as mentioned before. Consequently the willingness to incur high debts might have declined at the same time as the students became less motivated to complete a degree.

Another reason for controlling age group is that the student aid system in 1971 was made accessible to part-time students too. Normally these students do not intend to complete a degree, but they enter post-secondary education in order to take a few courses as a supplementary education. This change in access may lead up to a decrease in frequency of degree completion among students using the aid. However, a decrease due to this change must not be considered as a negative result for the aid system.

Since the future prospects of the labour market deteriorated most for students in open admissions courses and since part-time students are

most frequently found in open admissions courses, we will have to control for *course of study* too.

Social background and *sex* are inevitable variables since study assistance is aimed to neutralize the effects of these variables on the choice of post-secondary program and on degree completion. Consequently it is of great interest to investigate whether the effects of study assistance will vary between students of each sex and between students from different social classes. Some results in an earlier investigation (Reuterberg & Svensson, 1983,a) indicate that there are some such interactions.

As shown by Svensson (1977) *intelligence* is a variable of importance for success in studies also at the post-secondary level. Probably this variable will influence the student's decision on using the student aid too. If the student feels fairly sure that he will be able to complete a degree, he does not hesitate to incur the debts associated to the student aid as much as if he is uncertain about his possibilities.

Intelligence is an interesting variable from another point of view too. In the former student aid system there was a test of academic ability but, as we said before, this is not so now. Therefore it is of some interest to investigate to what extent academic ability is still a factor influencing the decision on using study assistance.

We said earlier that we will investigate the relationship between study assistance and success in post-secondary education. This is only one part of the greater problem of studying the effect of study assistance on success in post-secondary education. Another part is about the utilization of student aid. If there are differences between different groups in the utilization of the aid, the relationship between student aid and success in studies will be a misleading measure of the total effect of student aid. Therefore, we will first investigate the effect of age group, study course, social background and sex on utilization of student aid. After that we will study the effect of all these variables on degree completion.

In order to make the results more easily comprehensible, we will first make separate analyses on each age group and course of study. After that we will investigate whether the effects found will vary between age groups and between courses of study.

Within each age group and course of study the variables have been ordered in the following causal model.

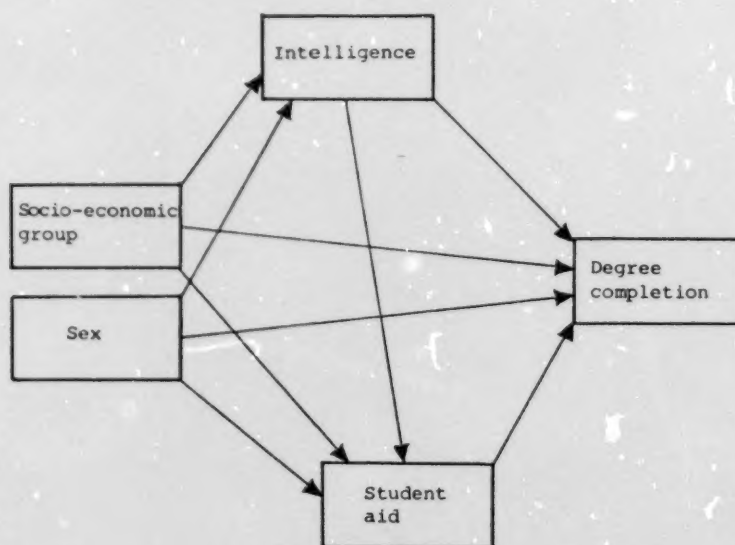


Figure 1. *Causal model of the variables involved in the analyses made within each age group and course of study.*

The arrows in figure 1 describe direct effects, which means the effect of one variable on another one when all other variables in the model are kept under control. For instance, the arrow from "student aid" to "degree completion" describes the effect of student aid on degree completion when social background or sex and intelligence are kept under control.

As shown in the figure, sex and social background will not be controlled for in the same analysis, since this would bring about too small group-sizes. Instead we will make two separate analyses; one with social background under control but with both sexes included and another with sex under control but with students from different social groups included. However, since social background and sex are uncorrelated, this will not materially influence the results.

We are not only interested in studying direct effects but also in studying interactions, i.e. we are interested in finding out whether the effect of one variable on another one will vary between different subgroups.

Now we can summarize the discussion so far by formulating the following questions to be answered in this report:

- 1) To what extent do social background, sex and intelligence influence the utilization of study assistance?
- 2) Are there any interactions so that social background or sex influence the utilization of study assistance to a different extent among students on different intelligence levels?
- 3) Do the answers to question 1 and 2 vary between age groups and between courses of study?
- 4) To what extent do social background, sex, intelligence and study assistance influence success in studies?
- 5) Are there any interactions so that the influence of each of these variables varies between different subgroups?
- 6) Do the answers to question 4 and 5 vary between age groups and between courses of study?

SAMPLES AND VARIABLES

The groups studied were taken from the Individual Statistics Project. This project started in 1961 and then included all Swedes born on the 5th, 15th and 25th of any month in 1948. In 1966 a new sample was selected including those Swedes born on the same days of any month in 1953.

The first sample includes a total of some 12,000 individuals and the second one a total of some 10,000 individuals.

On the first occasion when data were collected, the main part of the two samples was in the sixth grade within the compulsory school system. The basic data collected on this occasion consist of:

- I Information from school records, e.g. grade, type of class and school marks.
- II Information on personal background, such as parents' occupations and education.
- III Scores on three intelligence tests: verbal, spatial and reasoning.
- IV Scores on standardized achievement tests in Swedish, mathematics and English.
- V Replies to questionnaires on the pupils' attitudes to school, their spare-time interests and plans for study and work.

This basic information was subsequently supplemented on an annual basis with data as to the educational status until the individuals were about 20 years old. Later on, the information collected in the Individual Statistics Project has been supplemented with data from various registers as to course of study, year of registration, degree awarded and information as to utilization of study assistance.

Additional information on the Individual Statistics Project may be found in Härnqvist & Svensson (1973).

Of the individuals born in 1948, about 1,500 had entered a university program by the age of 23. The corresponding number for those born in 1953 is about 1,100. These individuals formed the basis for this study.

Before we account for the results of the study, some of the variables will be defined in greater detail:

The social background of the individuals is classified with the aid of information about the education and occupation of the father. Five groups are distinguished:

- A) Academic professions. Persons with management positions in civil service and industry.
- B) Civil servants and white-collar workers in lower positions *with* a theoretical education beyond compulsory schooling.

- C) Civil servants and white-collar workers in lower positions *without* a theoretical education beyond compulsory schooling.
- D) Farmers.
- E) Blue-collar workers.

In this study, however, the group-sizes do not permit such a detailed classification. Instead we have to work with two categories: A-B and C-E respectively. In A-B the students' fathers have a theoretical education beyond compulsory schooling but in group C-E they have not.

Course of study consists of two categories too:

- 1) Open admissions courses (Faculties of Arts and Sciences).
- 2) Closed admissions courses (Other faculties).

Besides being open and closed respectively the closed admissions courses are normally more vocational preparatory and the students normally have to complete a degree in order to derive full advantage from their post-secondary education. Therefore, degree completion is much more frequent in these courses compared to open admissions courses.

Our criterion for *successful studies* is a completed academic degree before the age of 26. This is a rather rough measure of academic success but unfortunately more detailed information is not available. An age limit of 26 was chosen because the information from the register of degree awarded was received in 1980 and then it contained information up to 1979, when the students in the youngest age group were 26 years old. To be able to complete a degree at that age the students must enter a university program by the age of 23 at the latest. Students entering a university program afterwards are not included in this study.

The time limits for registration and degree completion can be seen in figure 2 (next page).

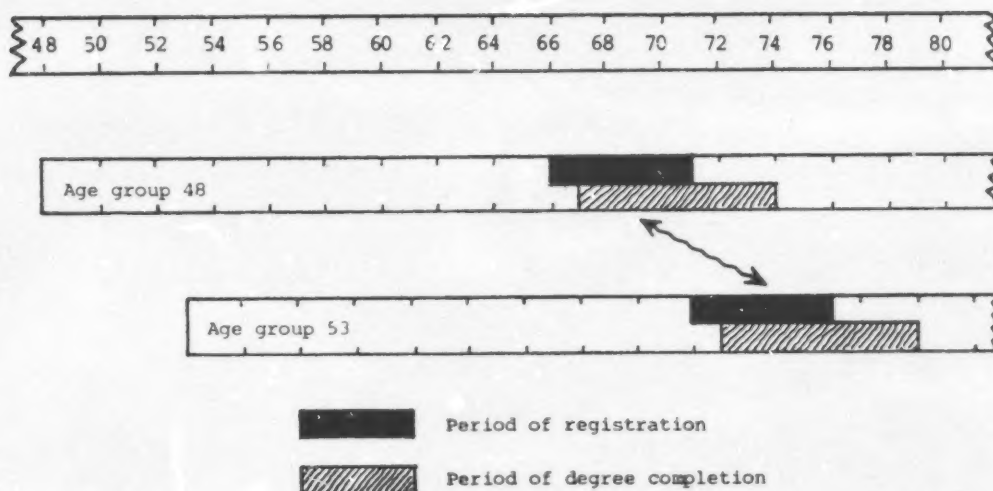


Figure 2. Time limits for registration and degree completion.

Intelligence is defined as the total sum of scores on the three tests: verbal, spatial and reasoning. Each test contains 40 items and their reliabilities are about 0.90. The students are divided into two categories, high and low intelligence. High intelligence means that the student's score is better than the median for his age group and his course of study, and low intelligence that he has scored below the median. The term "low intelligence" is somewhat misleading since the mean for this group is above the mean for all Swedes born in 1948 and 1953 respectively. Still, we have used this term because we have not been able to find a better expression.

The students who have been classified as having used the *student aid* have used both the grant part and the loan part. In the younger age group there are some 7% who have used only the grant part. They have been brought together with the students who have not used the aid, because the grant is such a small part of the total aid.

DESCRIPTION OF THE GROUPS

Of all Swedes born in 1948 and in 1953, 15.0 and 12.3% respectively have entered a university program at the age of 23. As can be seen in table 1, this decrease in enrollment is caused entirely by the open admissions courses, in which the number of students has been reduced by nearly 50%.

Consequently the distribution of students has been more even among the two courses of study. This change is most pronounced among the female students. As can be seen in table 1, only one female student out of four has chosen a closed admissions course in the older age group. In the younger one this proportion has increased to more than 40%.

Table 1. *The distribution of students according to sex and course of study.*

Course of study	Born in 1948						Born in 1953					
	Men		Women		Total		Men		Women		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Open adm.cours.	548	60	470	75	1018	66	329	49	257	57	586	52
Closed - " -	367	40	157	25	524	34	341	51	193	43	534	48
All	915	100	627	100	1542	100	670	100	450	100	1120	100

Table 2. *Socio-economic group affiliation among students born in 1948.*

Socio-economic group	Open adm. courses			Closed adm. courses		
	Men	Women	Total	Men	Women	Total
A - B	42	41	41	48	52	49
C - E	58	59	59	52	48	51
All	100	100	100	100	100	100

Table 3. *Socio-economic group affiliation among students born in 1953.*

Socio-economic group	Open adm. courses			Closed adm. courses		
	Men	Women	Total	Men	Women	Total
A - B	49	53	51	53	52	53
C - E	51	47	49	47	48	47
All	100	100	100	100	100	100

Tables 2 and 3 show that the two socio-economic groups are of approximately equal size except among those students born in 1948 who have entered an open admissions course. However, these even distributions do not mean that there is social equality of opportunity. If the students' socio-economic distributions are related to those for all Swedes born in 1948 and in 1953 respectively, we will find that the probability of entering a university program is about five times as large for a person from A-B compared to a person from C-E.

As we said before, the students are divided into two ability categories according to the sum of scores on three different intelligence tests. In table 4 we show the means and standard deviations for the two categories of students.

Table 4. *Sum of scores on intelligence tests. Means and standard deviations for students of high and low ability respectively.*

Intelligence level	Born in 1948				Born in 1953			
	Open adm. courses		Closed adm. courses		Open adm. courses		Closed adm. courses	
	M	S	M	S	M	S	M	S
High	89.2	7.1	92.3	6.8	90.3	6.0	94.6	7.0
Low	64.2	10.8	69.7	10.9	69.2	9.5	73.1	9.1

The differences between the means for high and low ability categories are about 20 points. Despite these big differences the means for the low ability groups are somewhat higher than those for all Swedes born in 1948 and in 1953 respectively. There is not only a difference in means between the two categories, but the standard deviations are consistently lower for the high ability group. This is due to the fact that the dividing points (the medians) are as high as about 80 points.

We can also see in the table that students in closed admissions courses have somewhat higher means than students in open admissions courses. These differences are natural since there is normally a hard competition for a place in the closed admissions courses.

Table 5. *Frequency of student aid utilization by age group and course of study.*

	Open adm. courses	Closed adm. courses	Total
Born in 1948	84.5	93.5	87.6
Born in 1953	82.9	91.8	87.1

Table 5 shows that in both age groups nearly nine students out of ten have used study assistance. Furthermore, this proportion is higher among students in closed admissions courses compared to those in open admissions courses. This difference is mainly due to the fact that part-time studies are most frequent among students in open admissions courses. Even if study assistance has been available also for part-time students in the younger age group, they have not used the aid to such an extent as full-time students.

The figures in table 5 also show that the utilization of student aid has declined somewhat between the two groups. This decline, however, is explained by the fact that it has been more frequent to refrain from the loan part of the aid.

In an earlier report (Reuterberg & Svensson, 1982) we have shown that the students have used the aid for a period corresponding to the length of the courses. Consequently, students in closed admissions courses have had the aid for a somewhat longer time than students in open admissions courses.

Table 6. *Frequency of degree completion by age group and course of study.*

	Open adm. courses	Closed adm. courses
Born in 1948	36.3	77.3
Born in 1953	26.1	62.6

Despite the fact that there are only small differences between the age groups concerning student aid utilization, there is a notable decrease in degree completion. Among students in open admissions courses degree completion has decreased by 10% and among students in closed admissions courses by nearly 15. This implies that in the younger age group only one student out of four in open admissions courses completes a degree after at least three years of study. The corresponding proportion among students in closed admissions courses is nearly two out of three.

The decline in degree completion and the differences between courses of study are, to some extent, explained by the fact that it has been more common to enter a university program without intending to complete a degree. If the student aid is a contributory cause will be discussed later in this report.

STATISTICAL METHODS

As we said before we will study direct effects of different background variables on the utilization of student aid and on degree completion. Direct effects mean the influence of one background variable when the other variables are kept under control and these effects are expressed as differences between proportions. For instance, a direct effect of student aid on degree completion of 0.20 means that students who have used the aid have a frequency of degree completion which is 20% higher than students without the aid when the differences between the two groups in ability and social background or sex are kept under control.

A detailed technical description of the method used is given by Hellevik (1980).

However, we are not only interested in the direct effects but also in interactions between variables. For instance, the direct effect of 0.20 mentioned above may vary between different subgroups. If it is 0.15 for students from socio-economic group A-B and 0.25 for those from C-E, we have an interaction between social background, student aid and degree completion. This interaction means that student aid is of the greatest

importance for degree completion among students from lower socio-economic groups.

In order to test the significance of these interactions we have worked with log linear models. Unfortunately, it is not possible to make a technical description of this method here. Instead we have to refer to Everitt (1977) for an introductory description and to Bishop, Fienberg & Holland (1975) for a more exhaustive description.

THE EFFECTS OF BACKGROUND VARIABLES ON UTILIZATION OF STUDY ASSISTANCE

The first results to be accounted for are about the utilization of study assistance. The questions formulated in this connection are:

- To what extent do social background, sex and intelligence influence the utilization of study assistance?
- Are there any interactions so that social background or sex influence the utilization of study assistance to a different extent among students of different intelligence levels?
- Do the answers to these questions vary between age groups and between courses of study?

The answer to the first question is given in table 7 where the figures represent differences between proportions. Positive figures mean that the utilization is more frequent:

- among students from socio-economic group A-B than among students from C-E
- among male students than among female students
- among students of high ability than among students of low ability.

The answers to the other two questions are given in tables 8-10.

In these tables the figures represent G^2 -values which are comparable to χ^2 -values and have the same distribution as χ^2 . In order to restrict

the number of values given we have shown the G^2 -values only for interactions including utilization of study assistance.

Table 7. *Direct effects of social background, sex and intelligence on utilization of student aid. Differences between proportions.*

Direct effect of	Born in 1948		Born in 1953	
	Open adm. courses	Closed adm. courses	Open adm. courses	Closed adm. courses
Socio-economic gr.	.04	-.01	.01	.01
Sex	-.02	.00	.02	.02
Intelligence	.10	.04	.05	.04

.04 means 0.04

Table 7 shows that the differences in frequency of student aid utilization are quite small between students from different socio-economic groups, of each sex and between students of different ability. The biggest differences are found among students who were born in 1948 and who have entered an open admissions course. In this category the proportion of students who have used study assistance is 4% higher in socio-economic group A-B compared to C-E and 10% higher in the high ability group compared to the low ability group. However, both these differences have decreased during the time separating the two age groups.

Of the three independent variables studied, intelligence is the variable which has the greatest effect on the utilization of study assistance. Certainly, the trend is weak but it holds for both age groups and both courses of study. This result is interesting for two reasons. First, it shows that we were at least partly right in assuming that the student's ability is a factor which influences the decision on using the aid. Secondly, it shows that intelligence is still a factor of some importance despite the fact that no prognosis is made on the basis of earlier achievement in the new study assistance system in order to be eligible for the aid.

Now, we are going to investigate whether there are any significant interactions, i. e. whether social background or sex is of varying importance for the utilization of study assistance among students of high and low

ability respectively. Furthermore, we will investigate whether there are any differences between age groups or courses of study. If so these differences will appear as significant interactions with these two variables involved.

Table 8. *Tests of significance of interactions between socio-economic background (SES) or sex, intelligence (INT) and utilization of study assistance (AID): Within age groups and courses of study. (G^2 -values).*

	Born in 1948		Born in 1953	
	Open adm. courses	Closed adm. courses	Open adm. courses	Closed adm. courses
SES*INT*AID	0.03	1.55	0.60	2.75
SEX*INT*AID	0.68	0.00	0.16	0.99

Critical value here and in the following tables is $G^2 = 3.84$ for significance at the 5% level.

As can be seen in table 8 there are no significant interactions. This means that the effects of social background and sex on utilization are the same for students of high and low ability respectively.

Table 9. *Tests of significance of interactions between course of study (COS) socio-economic background or sex, intelligence and utilization of study assistance. Within age groups (G^2 -values).*

	Born in 1948	Born in 1953
COS*SES*AID	1.45	0.01
COS*SEX*AID	1.44	0.98
COS*INT*AID	0.23	0.17
COS*SES*INT*AID	0.05	0.31
COS*SEX*INT*AID	0.29	0.15

Table 10. *Tests of significance of interactions between age group (AGE), socio-economic background or sex, intelligence and utilization of study assistance. Within courses of study. (G^2 -values).*

	Open adm. courses	Closed adm. courses
AGE*SES*AID	0.68	0.00
AGE*SEX*AID	0.76	0.18
AGE*INT*AID	0.95	0.13
AGE*SES*INT*AID	0.73	3.09
AGE*SEX*INT*AID	0.03	0.38

Neither in table 9 nor in table 10 are there any significant interactions. Consequently we can draw the following conclusion from the analyses made so far:

The utilization of study assistance is practically independent of social background and sex but there is a weak tendency for students of high ability to use the aid somewhat more frequently than students of low ability.

Furthermore, this conclusion has been shown to be valid for the two age groups and the two courses of study.

THE EFFECTS OF BACKGROUND VARIABLES AND STUDY ASSISTANCE ON FREQUENCY OF DEGREE COMPLETION

The results now to be accounted for are about degree completion. The questions we formulated in this connection are:

- To what extent do social background, sex, intelligence and study assistance influence success in studies?
- Are there any interactions so that the influence of each of these variables varies between different subgroups?
- Do the answers to these two questions vary between age groups and between courses of study?

The methods to be used here are the same as before but we have to add that a positive effect of study assistance on degree completion means that the frequency of degree completion is higher among students who have used the aid than among students who have not.

Table 11. *Direct effects of social background, sex, intelligence and study assistance on degree completion. Differences between proportions.*

Direct effect of	Born in 1948		Born in 1953	
	Open adm. courses	Closed adm. courses	Open adm. courses	Closed adm. courses
Socio-economic st.	-.04	-.01	-.01	-.01
Sex	.04	-.17	.06	-.22
Intelligence	.14	.06	.08	.08
Student aid	.33	.16	.15	.20

Among the students in open admissions courses no other independent variable has an effect on degree completion as large as study assistance. However, among students in closed admissions courses sex has been of the same importance. The very greatest effect of study assistance is found among those students who were born in 1948 and who have entered an open admissions course. Within this category the frequency of degree completion is more than 30% higher among those students who have used the aid compared to those students who have not. In the other three categories of students the corresponding differences vary between 15 and 20%.

The sex differences within closed admissions courses are negative, which implies that female students have a higher frequency of degree completion than male students. These sex differences are very interesting because they imply that the overrepresentation of males at the entrance to these courses of study (compare table 1) has been reduced to a large extent when we look at those who have completed a degree within the time limit used.

Besides study assistance and sex, intelligence influences degree completion. Among those students who were born in 1948 and who have entered an open admissions course the frequency of degree completion is 14% higher for

students of high ability than for students of low ability. The corresponding differences within the other categories are 6 and 8% respectively.

The only variable which seems to be of no importance to degree completion is social background. On the other hand, as we have said before in this report, there are very big social differences in enrollment into post-secondary education. Consequently this variable has exerted all its influence at earlier educational levels and at the transition to the post-secondary level.

Now, let us see whether there are any significant interactions or if the results just mentioned can be said to be valid for each of the subgroups.

Table 12. *Tests of significance of interactions between socio-economic background or sex, intelligence, study assistance and degree completion. Within age groups and courses of study. (G^2 -values).*

	Born in 1948		Born in 1953	
	Open adm. courses	Closed adm. courses	Open adm. courses	Closed adm. courses
SES*AID*DEGREE	9.16*	6.18*	3.33	1.99
SEX*AID*DEGREE	0.00	0.30	0.36	1.05
INT*AID*DEGREE	1.31	0.01	1.02	0.32
SES*INT*AID*DEGREE	1.95	0.75	0.47	0.82
SEX*INT*AID*DEGREE	0.47	0.01	0.08	0.05

Within the younger age group there are no significant interactions. Consequently the results shown in table 11 for these students can be considered valid for each of the subgroups. For both courses of study, among students born in 1948, there is a significant interaction between socio-economic group, study assistance and degree completion. This interaction implies that the influence of study assistance on degree completion varies between the two socio-economic groups. The implication of these two interactions is shown in tables 13 and 14 (next page).

Table 13. *The influence of study assistance on degree completion within different socio-economic groups. Students born in 1948, open admissions courses.*

Socio-economic groups	Student aid	Frequency of degree completion	EFFECT OF	
			soc.-ec. group	student aid
A - B	With	.38	- .06	.23
	Without	.15		
C - E	With	.44	.13	.42
	Without	.02		

Table 14. *The influence of study assistance on degree completion within different socio-economic groups. Students born in 1948, closed admissions courses.*

Socio-economic groups	Student aid	Frequency of degree completion	EFFECT OF	
			soc.-ec. group	student aid
A - B	With	.78	- .02	-.04
	Without	.82		
C - E	With	.80	.41	.39
	Without	.41		

The last column of the tables shows that study assistance is of its greatest importance for degree completion among students from lower socio-economic groups. Another way of expressing the same interaction is shown in the column "effect of socio-economic group" where the figures show that there are clear differences in degree completion to the advantage of higher social groups among those students who have not used the aid but there are no such differences at all among students who have used the aid.

In table 6 (page 12) we have shown that the frequency of degree completion is much higher among students in closed admissions courses compared to students in open admissions courses and that the frequency of degree

completion has decreased between the two age groups. Now, we will study whether there are any interactions with age group and course of study involved. The results are given in tables 15 and 16, below.

Table 15. *Tests of significance of interactions between course of study, socio-economic background or sex, intelligence, study assistance and degree completion. Within age groups (G^2 -values).*

	Born in 1948	Born in 1953
COS* <i>AID</i> * <i>DEGREE</i>	8.23*	0.09
COS* <i>SES</i> * <i>AID</i> * <i>DEGREE</i>	0.03	4.84*
COS* <i>SEX</i> * <i>AID</i> * <i>DEGREE</i>	0.19	1.69
COS* <i>INT</i> * <i>AID</i> * <i>DEGREE</i>	0.05	0.17
COS* <i>SES</i> * <i>INT</i> * <i>AID</i> * <i>DEGREE</i>	0.21	1.27
COS* <i>SEX</i> * <i>INT</i> * <i>AID</i> * <i>DEGREE</i>	0.21	0.03

Table 16. *Tests of significance of interactions between age groups, socio-economic background or sex, intelligence, study assistance and degree completion. Within courses of study. (G^2 -values).*

	Open adm. courses	Closed adm. courses
<i>AGE</i> * <i>AID</i> * <i>DEGREE</i>	7.95*	0.00
<i>AGE</i> * <i>SES</i> * <i>AID</i> * <i>DEGREE</i>	0.72	6.94*
<i>AGE</i> * <i>SEX</i> * <i>AID</i> * <i>DEGREE</i>	0.33	0.04
<i>AGE</i> * <i>INT</i> * <i>AID</i> * <i>DEGREE</i>	0.47	0.00
<i>AGE</i> * <i>SES</i> * <i>INT</i> * <i>AID</i> * <i>DEGREE</i>	0.31	1.52
<i>AGE</i> * <i>SEX</i> * <i>INT</i> * <i>AID</i> * <i>DEGREE</i>	0.07	0.01

First we have the two interactions between course of study, study assistance and degree completion among students born in 1948 (table 15) and between age group, study assistance and degree completion among students in open admissions courses (table 16). These two interactions have the same cause,

which we have shown in table 11 (page 18). The results in this table showed that the direct effect of study assistance on degree completion was greater for those students born in 1948 who had entered an open admissions course than for those students in the same age group who had entered a closed admissions course. The direct effects for these two groups were 0.33 and 0.16 respectively. The direct effect of 0.33 is also greater than that for those students born in 1953 who had entered an open admissions course (0.15), and this is the cause of the significant interaction in table 16 between age group, study assistance and degree completion.

In tables 15 and 16 there are another two significant interactions. One of them, shown in table 15, is between course of study, social background, study assistance and degree completion among students born in 1953. The other one is found in table 16 and it is between age group, social background, study assistance and degree completion among students in closed admissions courses.

In an earlier analysis (table 12, page 19) we found that there was a significant interaction between social background, study assistance and degree completion among those students who were born in 1948. However, in this case the interactions were of the same kind for both courses of study implying that student aid was of greatest importance for students from lower social groups. This similarity means that there is no interaction between course of study, social background, study assistance and degree completion among students born in 1948. The fact that this interaction is significant for students born in 1953 implies that the effect of study assistance on degree completion will vary between the two socio-economic groups but in such a way that it differs between the two courses of study.

In order to make this rather complicated interaction understandable we will construct two new tables of the same kind as tables 13 and 14 but now for the students born in 1953. By comparing the results in these two new tables the interaction between course of study, social background, study assistance and degree completion will be explained.

Table 17. *The influence of study assistance on degree completion within different socio-economic groups. Students born in 1953, open admissions courses.*

Socio-economic groups	Student aid	Frequency of degree completion	EFFECT OF soc.-ec. group student aid	
A - B	With	.27	} -.03	} .09
	Without	.18		
C - E	With	.30	} .10	} .22
	Without	.03		

Table 18. *The influence of study assistance on degree completion within different socio-economic groups. Students born in 1953, closed admissions courses.*

Socio-economic groups	Student aid	Frequency of degree completion	EFFECT OF soc.-ec. group student aid	
A - B	With	.65	} .02	} .33
	Without	.32		
C - E	With	.63	} -.23	} .08
	Without	.55		

A comparison between the results in tables 17 and 18 shows that, among students in open admissions courses, study assistance is of its greatest importance to degree completion for students from lower socio-economic groups. In closed admissions courses, on the contrary, study assistance is more important for degree completion among students from higher social strata than among students from lower. Consequently the result for students in open admissions courses is in agreement with those for the students born in 1948 but for students in closed admissions courses the results differ. This different result for students in closed admissions courses is the cause of both the interaction between course of study, social background, study assistance and degree completion among students born in 1953 and the interaction between age groups, social background, study assistance and degree completion among students in closed admissions courses.

A closer look at the tables 13, 14, 17 and 18 will reveal another interesting feature. In all the four tables there are practically no social differences in frequency of degree completion among students who have used the aid, but among students who have not used the aid the frequency of degree completion is higher for students from socio-economic group A-B except among those students who were born in 1953 and who have entered a closed admissions course. In the last-mentioned group the difference in degree completion shows instead an advantage for students from socio-economic group C-E.

One plausible reason for this different result is that group C-E has shown to have a considerably higher mean on the intelligence test compared to the corresponding students from A-B. Consequently this difference in ability may be one factor of importance for the high frequency of degree completion among those students born in 1953 who come from lower socio-economic groups and who have entered a closed admissions course without using the study assistance. Finally we will warn against any far-reaching conclusions from this different result since the group concerned is quite small - around 20 persons only.

To sum up the results concerning study assistance and degree completion we can say:

On the whole, study assistance is the variable which has been of greatest importance to degree completion among the variables studied. Furthermore, it has had a considerable socially equalizing effect on the main part of the students. However, for students in open admissions courses the influence of study assistance on degree completion has decreased during the time separating the two age groups.

SUMMARY AND DISCUSSION

The results are summarized in figures 3-6. The values given in these figures are the same differences between proportions as those which we have presented before. Consequently they represent direct effects, which means that they show the influence of one variable on another when other variables included in the figure are kept under control. In order to make the figures complete, the effects of social background and sex on intelligence are added. Positive values for these effects mean that the proportion of students of high ability is bigger among students from socio-economic group A-B than among students from C-E and bigger among male students than among female students.

Values at the arrows pointing at "student aid" indicate the influences of social background, sex and intelligence on utilization of study assistance. The values at arrows pointing at "degree completion" indicate to what extent this variable is influenced by each of the other variables in the model.

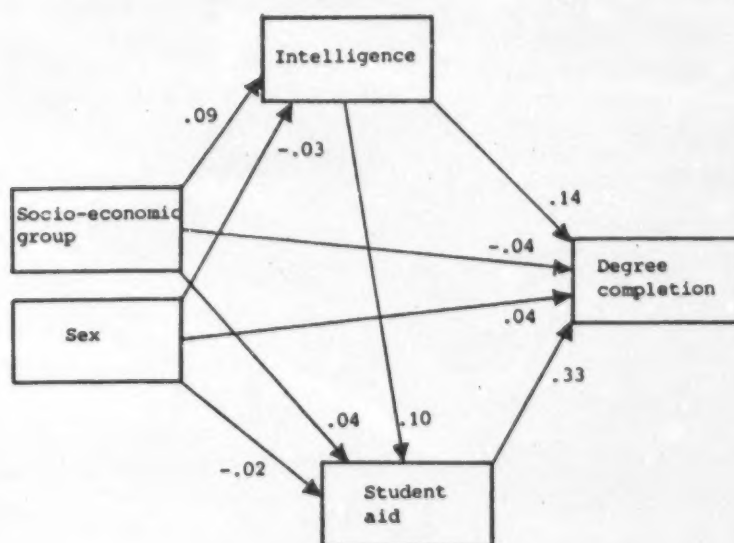


Figure 3. *Direct effects among students in open admissions courses. Students born in 1948.*

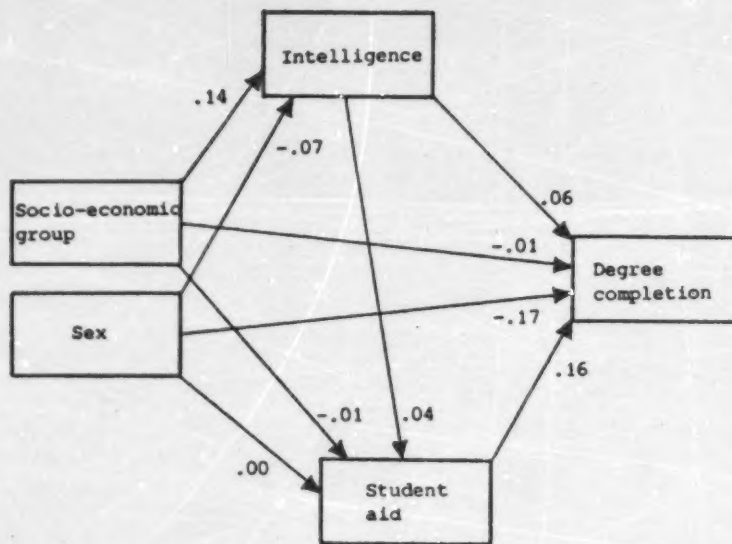


Figure 4. *Direct effects among students in closed admissions courses. Students born in 1948.*

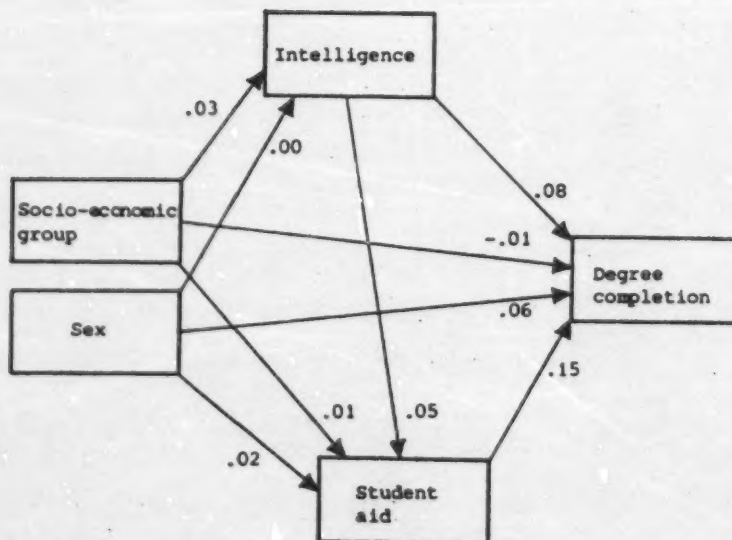


Figure 5. *Direct effects among students in open admissions courses. Students born in 1953.*

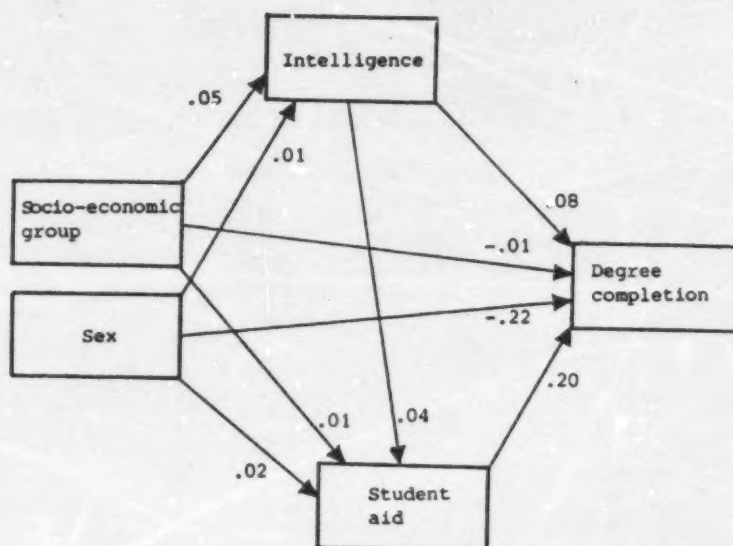


Figure 6. *Direct effects among students in closed admissions courses. Students born in 1953.*

On the whole, the results show a weak tendency for students of high ability to use the aid somewhat more frequently than students of low ability, while social background and sex seem to be of no influence at all.

To a non-Swede the fact that social background has no influence on the utilization of the aid might be somewhat surprising for in most other countries there is an examination of need in relation of the income or private means of the student's parents. However, such an examination is not made in Sweden. It is true that the student's income and private means must not exceed certain limits but the rules are fairly generous and our results show that they have not caused any differences in the utilization of the aid.

Even if there are only small differences within each category when the students are divided according to age group and course of study, there is a difference in the utilization of the aid between courses of study. In closed admissions courses more than nine out of ten students have used the aid while in open admissions courses the corresponding proportion is somewhat

more than eight out of ten students. This difference between courses of study is mainly due to the fact that part-time studies are most frequent in open admissions courses. Normally these students have an income and therefore they do not need to use the aid.

As we have discussed in "background and aim", study assistance has become less advantageous to the students, since the repayable part of the total sum has been increased successively. The effect of this change may be illustrated by comparing the total debt for a typical student born in 1948 with that for a typical student born in 1953. After having used the aid for four years the former has a total debt of S.cr. 30,000 but for the student born in 1953 the total debt amounts to S.cr. 47,000.

Despite the increasing debts, the frequency of study assistance utilization has not changed remarkably between the age groups, nor have the influences of social background or sex on the utilization increased. These results together with the fact that the social differences and sex differences at the transition to higher education have not increased (tables 1-3) give some support to the conclusions drawn by Woodhall (1982) about the importance of loans. She writes:

Student loans do not automatically deter working class students or women from participating in higher education.
(page 7)

Concerning the influence of the variables studied on frequency of degree completion, none of the other variables can match study assistance. Certainly, in closed admissions courses, sex has been of as great importance as study assistance, which means that female students have been more successful than male students, but in open admissions courses sex has been of far less importance.

Why has sex had such a great effect on frequency of degree completion in closed admissions courses? Probably this is due to the fact that only those women who are most determined in their educational choice and who feel reasonably sure to be successful dare to enter a program which is so unusual for their sex. Consequently this group of women is a more highly selected group than the corresponding male group. Furthermore, it is not unlikely that these women feel a greater pressure to be successful in studies just because they have made this uncommon choice of program.

Besides these two variables, intelligence has had some influence, while social background seems to be of no importance at all. Social equality in frequency of degree completion can, to a large extent, be attributed to the influence of study assistance, because the aid has been of greatest importance for frequency of degree completion among students from lower social strata. In our results this is shown by the fact that there are no social differences in frequency of degree completion to the advantage of students from higher social strata among those students who have used the aid while, with one exception, there are quite big such differences among those students who have not used the aid.

So far the results have given a very positive description of study assistance. However, there are some negative features too. One negative feature is the fact that the frequency of degree completion has decreased considerably between the two age groups in spite of study assistance being used to about the same extent. Another one is the decreasing influence of study assistance on frequency of degree completion among students in open admissions courses.

Are these tendencies the effects of changes in the study assistance system or are they the effects of changes in other factors?

In our opinion there is no evidence of study assistance being the main cause. As the results have shown, the influence of study assistance on frequency of degree completion has decreased only among students in open admissions courses. Among students in closed admissions courses there is not such a tendency. If study assistance should be the main cause, its influence would have decreased for both categories of students.

Nor can the decreasing frequency of degree completion be explained by changes in the study assistance system. One reason for this is that there has been no change in the system itself that could cause such a big decrease. Another reason is that the results from another study (Reuterberg & Svensson, 1983b) have shown that the frequency of degree completion has decreased independently of the extent to which the students have been able to finance their studies via study assistance.

Consequently the negative features found in this study seem to be caused by changes in other factors. Probably, the most important of these other factors is the situation on the labour market that has become more and more difficult in recent years. This has caused many students to get a job even before they have completed a degree. Many of those who have managed to get a job have dropped out from university or they have been delayed in their studies so that they have not been able to complete a degree until after the age of 26 - the age limit used in this investigation. Further, we believe these tendencies to be most common among students in open admissions courses for whom the situation on the labour market has been most critical.

Partly as a consequence of the situation on the labour market it was quite common already in the older age group among students in the open admissions courses to enter a university program without the intention to complete a degree and it has been even more common to do so during the time period studied here. Normally they are part-time students. As we said before, in the older age group, this category of students were not allowed to use the aid, but in the younger age group they were. This change of the rules in the aid system may be one factor contributing to the decreasing influence of study assistance on frequency of degree completion.

Consequently our interpretation of the results is that study assistance is of great importance for frequency of degree completion and that it helps to bring about social equality. The decreasing frequency of degree completion and the decreasing influence of study assistance on this variable seem not to be mainly due to the aid system itself but to other factors. The influence of these other factors is not easily counteracted by changes in the study assistance system.

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